Operating Systems

Name: K. Aafreen Benazir
roll no: 19CSE001

2m

(1) All addresses need to be added by 250

So the addresses would be 300, 328, 400, 402, 404 respectively

(2) The ~~ooo~~ system's ~~must have~~ limit register must have 64 bits.

8m . . . . . .

1.)(i) A page fault occurs when there is no free frame available and when an access to a page that has not been brought into main memory takes place. The operating system verifies the memory access, aborting the program if it is invalid. If it is valid, a free frame is located and I/O is requested to read the needed page into the free frame. Upon completion of I/O, the process table and page table are updated and the instruction is restarted. . . . . .

1.)ii)

Situation 1 : when LFU generates fewer page faults than LRU

	1	2	3	4	2	1	5	6	2	1	2	3	7	6	3	2	1	2	3	6
1	1	1	1	4		4	5	5	5	1		1	7	7		2	2			2
		2	2	2		2	2	6	6	6		3	3	3		3	3			3
			3	3		1	1	1	2	2		2	2	6		6	1			6

LRU ⟹ Page faults : 15

LFU

	1	2	3	4	2	1	5	6	2	1	2	3	7	6	3	2	1	2	3	6
1	1	1	1	4		4	5	5		1		1	7	7	3		3			3
	2	2	2			2	2	2		2		2	2	2	2		2			2
		3	3			1	1	6		6		3	3	6	6		1			6

LFU ⇒ page faults : 14

page faults of LFU < page faults of LRU

Situation 2: when LRU generates fewer page faults than LFU

	7	0	1	2	0	3	0	4	2	3	0	3	2	1	2	0	1	7	0	1
7	7	7	7	2		2		4	4	4	0			1		1		1		
		0	0	0		0		0	0	3	3			3		0		0		
			1	1		3		3	2	2	2			2		2		7		

LRU ⟹ page faults of LRU ⇒ 12

LFU

7	0	1	2	0	3	0	4	2	3	0	3	2	1	2	0	1	7	0	1
7	7	7	2		2		4	4	3				3	3		3	3		3
	0	0	0		0		0	0	0				0	0		0	0		
		1	1		3		3	2	2				1	2		1	7		

page faults of LFU => 13 :

here page faults of LRU < page faults of LFU

8m

(2). page size = 4KB

free frame list

before allocating base of page table → 1000

13

11

9

7

5

3

1

2

4

6

8

Operating Systems

Name: K. Afreen Begum
Roll no: 19CSE001

2m

(1) All addresses need to be added by 250

So the addresses would be 300, 328, 1100, 1401, 1614 respectively

(2) The ~~~~ system's ~~must have~~ limit register must have 64 bits.

8m . . . . . .

1.)(i) A page fault occurs when there is no free frame available and when an access to a page that has not been brought into main memory takes place. The operating system verifies the memory access, aboriting the program if it is invalid. If it is valid, a free frame is located and I/O is requested to read the needed page into the free frame. Upon completion of I/O, the process table and page table are updated and the instruction is restarted. . . . . .